Coming of age

Diane Purchase considers the motivations behind students studying for a postgraduate qualification, the barriers they may confront and how academics can best support their students to continue the journey

Consider the following scenarios:

- A gleaming certificate bearing your name, the title of your first degree and your alma mater's insignia, is staring back at you in your hands; you wonder: "Where do I go from here?"
- A company payslip with depressingly few zeros in the correct places, silently returning your gaze; you ask: "How can I improve my prospects?"
- Images of cute polar bear cubs balancing precariously on the retreating ice sheets and/or helpless seabirds languishing in a sea of crude oil peering out from your television/MP3 player/PC, the narrator warning us about the perils facing our environment; you speculate: "What can I do to make a difference?"

Do they sound familiar? Could it happen to you?

DEMAND FOR PROGRAMMES

For most of us, gaining an undergraduate qualification is a significant milestone in our journey of education and it may represent a natural exit-point. However, an increasing number of graduates choose to continue their journeys by undertaking postgraduate studies. Over the past 12 years, postgraduate education in the UK has grown 36% faster than undergraduate education and almost 25% of students in UK higher education are postgraduates[1]. More specifically, a survey by the Higher Education Careers Services Unit revealed that approximately 23.6% of environmental-related graduates enter further study, compared to the average of 15.4% of all first-degree graduates[2]. So what inspires a budding Environmental Scientist to pursue a postgraduate degree?

Many graduates consider postgraduate study as an investment that boosts their long-term career prospects and give them an edge in this competitive job-hunting environment. It appears that the typical environmental professional is highly qualified. A 2009 poll of more than 2,000 environmental professionals indicated about 90% of those surveyed are educated to at least degree level, nearly half have a masters degree and 5% have a PhD degree[3]. A recent survey by the Institution of Environmental Science (IES) which canvassed the views of its Fellows, Full and Associate members[4] also found that degree qualifications, in particularly a postgraduate award, lead to higher pay and more seniority within an organisation. It is evident that in such a highly qualified and competitive job market, a postgraduate degree is decidedly desirable. Let us not forget the tough economic situation the UK is facing in 2011. The enormous budget deficit impacted both the public and private sectors and greatly reduced the availability of graduate appointments; many graduates may opt for a postgraduate qualification to avoid the

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challenging employment situation while improving their job prospects.

Employability may not be the only driving force behind postgraduate study. Continuing Profession Development (CPD) is essential to catch up with the changing levels and types of professional skills. In most professions employees are required to keep abreast of the knowledge and development in their area of expertise. Others seek to improve or upgrade their current skill base to better advance their career or improve their career prospects. These students are driven and focused, and also have very defined goals (see Shaw & Kemp, this volume).

Being passionate about the environment is another strong motivator to embark on postgraduate study. Students wish to develop a deeper understanding of the environment and many are enthused by the pursuit of specialised knowledge which enables them to 'make a difference'. A number of students on my own MSc programme cited this as one of the main reasons to engage in postgraduate study. Our students came from diverse backgrounds all over the world, but they are all passionate about their chosen subject and believe in using their skill and knowledge to help the environment (see **Box 1**). This strong sense of commitment to the environment is also reflected in the 2009 survey: four in five of the environmental professionals surveyed have a sense of "being able to make an environmental difference within their organisation" and 86% feel they can "make an environmental difference to society"[3]. Many MSc postgraduates went on to pursue their PhD degrees (this accounts for approximately 6-7% of our own MSc programme). A postgraduate degree not only provides the knowledge they seek, it also prepares students to take on further challenges to make a real impact in a specific research area.

It is apparent that most postgraduate students have a firm idea why they chose to undertake postgraduate study. Most are 'savvy' about environmental issues, passionate about making a difference and focused on improving their career opportunities. Funding, however, remains one of the major obstacles. In contrast to undergraduate degrees, there is less funding available for postgraduate study; many students will need to find sponsorship, fund themselves by working part-time or by getting a loan. With the implementation of the university tuition fee in 2012, students would accumulate an even more substantial debt if they choose to continue with postgraduate study. In an article in the Times Higher Education, Sir Adam Roberts asks: "if the fees reform puts graduates off postgraduate study, where will academia find its new blood?"[5].

Many universities will turn to overseas students as a means to fill this gap. The UK is not part of the signatory of the Bologna Declaration; universities in the UK are in a fairly unique position in Europe to be able to offer one-year master taught programmes. This is often seen as an advantage for overseas graduates who seek to complete a postgraduate degree.

THE BOLOGNA DECLARATION: AT A GLANCE

The Bologna Declaration on the European space for higher education is the main guiding document of the Bologna Process for creating the European Higher Education Area. It was adopted in 1999 by 29 European countries, pledging to reform their education systems to create a convergent European standard. Making academic standards more comparable would enable students and graduates to move between countries, using prior qualifications as acceptable entry requirements for study.

STUDENTS FROM OVERSEAS

Overseas postgraduate students may provide a valuable income stream to universities, but they also bring along their own set of challenges, from problems in gaining student visas to homesickness. Overseas students also have very different expectations, which could be exacerbated by their unfamiliarity with our academic requirements. Many students tell me the MSc programme is very intensive, much more so than they anticipated, and that there is not enough time to acclimatise. Many are puzzled by our exasperation when they lift and quote chapter and verse from internet sources onto their assignments. Some students shrink back from our attempts to encourage them to challenge and to critique. When asked for the reasons behind their reticence and reluctance to participate, they admit that they find the concept of challenging one's teachers both alien and uncomfortable. Expectation management is crucial to engage our overseas postgraduate students. If we are to preserve our current advantage in postgraduate provision, universities need to have additional resources in place (such as help in academic writing).

IMPROVING PROVISION IN THE UK

Postgraduate education in the UK has been identified as a great asset; the Smith report listed 24 recommendations to improve our postgraduate provisions[1]. Higher Education Institutions are asked to:

- take a lead on providing more opportunities to students to develop core competencies and transferable skills;
- embed transferable skills training in all postgraduate research programmes;
- provide flexible postgraduate provision e.g. work-base learning and multi-institutional delivery; and
- establish employer needs for postgraduate skills.

BOX 1: VOICE FROM THE LECTURE THEATRE

Personal statements from some students citing the main reasons for choosing to study the MSc Environmental Pollution Control programme at the University of Middlesex:

"I am really fond of environmental chemistry. It offers plenty of scientific theories to control and deal with environmental problems."
Yue, a student from China

"I have enjoyed an interdisciplinary approach in my environmental studies ... I made a decision to further study and gain professionalism in this area."
Neela, a student from Nepal

"Activities such as mining, oil exploration and gas flaring has begun to affect the environment, deteriorating living conditions and threatening the very world we lived in... It becomes imperative, therefore, to have more skilled environmental pollution experts and hence my interests."
Mobolaji, a student from Nigeria

"I intend to use the knowledge and expertise gained from this programme to become an advocate for the ecosystem, safeguarding the environment and human health."
Waleola, a UK student

"I have found particular interest in environmental microbiology; using microbes to clean up the environmental pollution... In future, I would like to specialise in some aspects of pollution control and management of the environment for pollution."
Aneta, a Polish student residing in the UK

"For the past few years my main objectives were concentrating with developments on problem solving skills in the global south [sic] and I am desperately in need of help, knowledge and skills in the environmental control to ensure that everybody is safe and plays by the law."
Basil, a French student residing in the UK

We need, therefore, to support our postgraduates, not just by equipping them with specialised knowledge, but also fostering skills that enable them to thrive in a competitive job market. Critical thinking, research techniques, time management, oral and written presentation skills are all crucial to their success and can be easily embedded in the design of the curriculum. Their learning experience can be enhanced by involving group work, presentation, project management, inventive formative assessment and case study analyses, which inject a strong dose of realism into the study. To introduce more flexibility in our

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mode of delivery, we could consider strategies such as day and/or block release, work-base learning and blended learning (using a combination of distance learning and traditional didactic teaching) all will provide greater flexibility for self-funded students who require to work part-time or working students who wish to improve their skills.

Establishing employer requirements for postgraduate skills is also essential. The Natural Environmental Research Council (NERC) issued a report on the skills required at postgraduate and professional level in their publication, *Most wanted: skills needs in the environmental sector*[6]. The review identified 224 postgraduate and professional skills or knowledge areas that are needed as well as 15 critical skills gaps (see **Box 2**). The needs of employers are also featured in the *Mapping the Environmental Science Landscape* report, which highlighted a number of employer issues and the willingness for employers to become engaged in the design of the Environmental Science curriculum[7]. Results from these reports helped to improve our provision, and target areas that are valued by employers, which enable our postgraduates to be employed in the environmental sector.

The IES has carried out a follow up survey for students who have graduated from their accredited programmes which will be published in September. The aim of this survey is to collect data on:

- levels of unemployment for recent graduates in the sector and how many went on to further study;
- attitudes towards internships; and
- attitudes towards professional bodies and the services they provide

It is hoped that this new survey will continue to enhance our curriculum design and better target the needs of our graduates.

Of course, we should continue to impart our own enthusiasm and love of our subject to our students. Site visits, seminars and lectures by guest speakers from renowned research institutions or the profession, engaging students in research, all help to inform and inspire.

BOX 2: MOST WANTED

The 15 Critical Skills Gaps identified by NERC (modified from their report[6])

Modelling –for innovation through exchange of knowledge and experience
Multi-disciplinarily –to work across academic boundaries
Data management – to provide understanding of data across the section both at the specialist level and at a cultural level
Numeracy – strong quantitative skills to apply to a range of situations
Translating Research – to work with policy makers, business and society; to improve public understanding and conversion of research into end products
Fieldwork – underpins environmental research and practice
Risk and Uncertainty – to quantify and interpret risks and to help decision making
Taxonomy and Systematic – to monitor and understand the functionality of the environments
Soil Science – for understanding issues across the environmental sectors such as food and energy security

Environmental Epidemiology – to relate public health and environmental conditions and hazards
Sustainability Science and Planning – to ensure sustainable use of natural resources
Microbiology – to understand the changes in ecosystem and the application in renewable energy and waste management
Food Supply – to manage and protect existing food supply and soil resources
Energy Supply – to develop and manage energy resources in relation to the environment
Freshwater – for efficient and sustainable use of water resources

TRANSFORMATION

Postgraduate study has come of age. It is no longer the ugly duckling of higher education, caught between the once well-funded undergraduate programmes and the much revered research degrees. As Harriet Swain from the Guardian puts it: "postgraduates have been expected to be not only brilliant researchers but team players, communicators, and above all employable"[8].

The substantial increase in the postgraduate number over undergraduate study is a clear indication that students recognise the values of a postgraduate degree. To turn it into a worthwhile investment, universities need to be proactive in shaping our provision, not only in enhancing the student's knowledge and skill base, but also in providing opportunities and support through flexible delivery for these students, engaging employers and other stakeholders in the design of the curriculum, so that our students can continue their journey in education towards a promising future. **ES**

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SOURCES

1. Department for Business, Innovations and Skills. One Step Beyond: Making the Most of Postgraduate Education. http://webarchive.nationalarchives.gov.uk/+/http://www.bis.gov.uk/postgraduate-review (2010)
2. Higher Education Careers Services Unit. What do graduates do? www.hecsu.ac.uk/assets/assets/documents/lmi/WDGD_Nov_2010.pdf (2010)
3. Environmental Data Services. ENDS Environmental Careers Guide. The ENDS reports. www.endsreport.com/reports/ecg (2010)
4. Heaton, J. & Rance, C. Membership Employment Survey 2010. Part 3: Qualifications. *Institution of Environmental Sciences.* www.ies-uk.org.uk/members/documents/IES_Employment_Report_2010.part3.pdf (2011).
5. Roberts, A. "It's hard to go on." Times Higher Education 23 December 2010. www.timeshighereducation.co.uk/story.asp?storycode=414668 [Accessed 21/03/2011].
6. Natural Environmental Research Council. Most wanted: postgraduate skills needs in the Environmental sector. www.nerc.ac.uk/funding/available/postgrad/skillsreview/ (2010)
7. Blumhof, J. & Holmes, P. Mapping the environmental science landscape: an investigation into the state of the environmental science subject in higher education. *CHES/IES/GEES.* www.ches.org.uk/publications.html (2008)
8. Swain, H. "How research degrees lead to greater employability." *Guardian.co.uk* 16 March 2010. www.guardian.co.uk/education/2010/mar/16/research-degrees-lead-to-greater-employability [Accessed: 21/03/2011].